

Claim

A method for pulsometric assessment of the functional state and the character of autonomic regulation of the human cardiovascular system wherein, from the subject under study in relative resting and under conditions of performing a load test, a pulsogram is recorded in a non-invasive way by the method of differential sphygmography with the aid of a respective transducer, the pulsogram being studied using the method of the "coding points", characterized in that the pulsogram analogue signal picked off from the transducer is transformed into a digital signal continuously recorded and analysed with the aid of a computer, with parallel periodic measurement of the blood arterial pressure (AP) using a sphygmomanometer; then a pulsogram fragment at least 2-minute long is selected and used for constructing a graph of the averaged cardiocycle and determining the "coding points"; the principle of the "coding points" disposition is transferred to each recognised normal pulsation of the selected fragment; and then, by the fragment, the temporal parameters characterising the heart rhythm and its variability are measured; by the same pulsogram fragment, the average value of the pulse arterial pressure (PAP) in conventional digital units is determined by means of integrating a respective part of the differential sphygmogram curve; and then, comparing this value with the average PAP value measured at the same period with the sphygmomanometer, the calibration coefficient of the AP proportionality is determined; and, taking the calibration coefficient into account, the conventional digital units are re-computed into conventional mm Hg, and on their basis the values of the blood arterial pressure increment are computed for different stages of the cardiac cycle, these values then being used for determining the amplitude-temporal cardiohemodynamic parameters characterising the left ventricle myocardium contractile capacity, namely:

- normalised pulse arterial pressure – PAP_n;

$$\text{- cardiohemodynamic index – CHDI} = \frac{\Delta \text{APA}_{\text{accel}}}{\Delta \text{APA}_{\text{decel}}},$$

where $\Delta \text{APA}_{\text{accel}}$ and $\Delta \text{APA}_{\text{decel}}$ are, respectively, accelerated and decelerated anacrotic increments of the arterial pressure;

- the average – $\text{VAP}_{\text{accel}}$ and maximum – Vmax_{APA} velocities of the anacrotic increment of the AP in the phase of accelerated expulsion of the blood from the left ventricle;

and the resilient-elastic properties of the arterial bed vessel walls, such as:

- rigidity index of the aorta walls $\text{RIA} = \frac{\Delta \text{APRS}}{\text{PAP}_n} \cdot 100\%$,

where ΔAPRS is the arterial pressure increment due to the pulse pressure wave parried from the periphery during the systole period, and

- the arterial wall tone index – $\text{TIA} = \frac{\Delta \text{APD}_{\text{accel}}}{\Delta \text{APA}_{\text{accel}}}$,

where $\Delta \text{APD}_{\text{accel}}$ is the accelerated diastolic increment of the blood arterial pressure during the starting period of diastole;

after which statistical processing of all the parameters is performed and spectral analysis of the heart rhythm variability and the selected amplitude-temporal cardiohemodynamic parameters are fulfilled, the results of which make it possible to assess the functional condition and specifics of the autonomic regulation of the subject's cardiovascular system by means of comparing the obtained parameters with the average statistical reference values of the same parameters as